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BUFFER SOLUTIONS, AND THEIR USE IN INTESTINAL DISEASES[1]

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A quarter century ago, an acid was defined as a compound which contained one or more hydrogen atoms replaceable by a metal, and, in aqueous solution, possessed a sour taste and gave an acid reaction with indicators, *e.g.*, imparted a red color to litmus. Today, the physical chemist defines an acid as a compound which dissociates in aqueous solution with the production of hydrogen ions. All acids yield hydrogen cations, the anion varies with the acid. It has long been recognized that acids differ in respect to their strength. In order to compare them with respect to their strength, the factor of concentration must be considered. The concentration is most readily expressed in terms of normality. If the molecular weight of an acid be divided by the number of replaceable hydrogen atoms in its molecule, and the quotient be expressed in grams, this mass is known as the gram equivalent of the acid; thus the gram equivalent of hydrochloric acid (HCl molecular weight 36.47) is 36.47 grams, of sulphuric acid (H_2SO_4 molecular weight 98.09) is 49.045 grams, of phosphoric acid (H_3PO_4 molecular weight 98.06) is 32.69 grams. If 1 gram equivalent of a given acid be present in 1 liter of its solution, that solution is a normal solution. If but 0.1 gram equivalent be present in one liter, the solution is designated as tenth-normal, etc.

One liter of the tenth-normal solution of each and every acid invariably contains 0.1008 gram of replaceable hydrogen. However, the degree to

[1] Contribution from the Constantine Hering Research Laboratory, Hahnemann Medical College, Philadelphia.

which an acid dissociates into its hydrogen ion and its anion varies with the acid and with its concentration. Thus in a tenth-normal solution the degree of dissociation is: Hydrochloric acid 92 per cent, acetic acid 1.34 per cent, butyric acid 1.07 per cent, lactic acid 3.84 per cent. Therefore, while the potential, titratable, or replaceable hydrogen in 1 liter of each of these solutions is 0.1008 gram, the mass of dissociated hydrogen present in that volume is: Hydrochloric acid 0.0927 gram, acetic acid 0.0014 gram, butyric acid 0.0011 gram, lactic acid 0.0039 gram. The stronger the acid, the greater is its hydrogen ion concentration or the mass of dissociated hydrogen present in 1 liter of its solution of a definite concentration. This hydrogen ion concentration is frequently expressed in terms of P_H, also written pH or p_H.

Pure water is very slightly dissociated. One liter at a temperature of 20°C. contains 0.0000001 gram equivalent of dissociated water; the hydrogen and hydroxyl (OH) ions are present in equal concentration. The water has a hydrogen ion concentration of 0.0000001 or 10^{-7} gram per liter, also written P_H 7.0. That is, the P_H is the logarithm of the reciprocal of the hydrogen ion concentration.

Since the water also contains in 1 liter the hydroxyl ion derived from 0.0000001 gram equivalent of water, and since that ion is the common anion of all bases, the water also has a definite, though slight, alkalinity, equal to its definite, though slight, acidity.

Therefore, a P_H of 7.0 represents true neutrality; a P_H numerically less than 7.0 represents an acid solution, and a P_H numerically greater than 7.0 represents an alkaline solution.

A buffer solution is defined by Clark (1) as a solution which is able to resist changes in its hydrogen ion concentration by addition or loss of acid or alkali. Take, for instance, the mixture of primary and secondary orthophosphates of the alkalies which functions as a buffer for the transport of carbon dioxide in the blood stream. If acids be added to this mixture, its reaction or P_H cannot become more acid than that of orthophosphoric acid until all the phosphates have been decomposed. Likewise, if sodium hydroxide be added to this mixture, its reaction cannot become more alkaline than that of trisodium ortho phosphate until all the phosphates have been transformed into that salt.

The term alkali reserve is sometimes applied to the amount of alkali which a buffer solution liberates for the neutralization of acid as it passes from a given P_H to a numerically lesser P_H.

Buffer solutions vary in composition according to the purposes for which they are applied, and the P_H range within which they act. A

buffer solution usually contains two solutes, such as: (*a*) An acid and its salt, *e.g.*, hydrochloric acid and potassium chloride. (*b*) A base and its salt, *e.g.*, sodium hydroxide and sodium citrate. (*c*) Two salts of the same polybasic acid, *e.g.*, primary potassium orthophosphate and secondary sodium orthophosphate. The P_H of a buffer solution depends upon the ratio of the two solutes to each other.

The feces normally are neutral or slightly alkaline in reaction. Robinson (2) gives the P_H of normal feces as between 7.0 and 7.5.

In colitis due to chronic saccharobutyric infection, butyric acid and certain of its homologues are produced in the intestine, and give rise to an acid stool which may excoriate the buttocks. Diarrhea, tenesmus, colic, and other symptoms are also present.

The treatment includes a high protein diet for not too long a period of time, transintestinal lavage with hypertonic salt solution, rectal implantation of Bacillus coli cultured from the patient's own feces, irrigation with alkalies, etc. The alkali used for irrigation usually is sodium bicarbonate. However, the carbon dioxide gas, generated by the action of the organic acids on the bicarbonate, is, at times, more annoying than the pain and diarrhea due to the disease. The sudden generation of gas may produce rupture of an ulcerated intestine, and the presence of the gas may produce cardiac embarassment.

Eberhard and the author (3) have used buffer solutions with success in the treatment of these infections. The solutions have been administered by rectal injection. They neutralize the organic acids without evolution of gas. The buffer solutions used were two: (I) An orthophosphate solution containing the primary potassium and secondary sodium salts and having a P_H of 8.043. (II) A solution containing secondary sodium citrate and sodium hydroxide and having a P_H of 12.364. Both solutions were prepared as directed by Sörensen (4). They yielded excellent results, restoring the feces to a neutral or alkaline reaction, removing the diarrhea and colic, tending to reëstablish the normal ratio between Gram-negative and Gram-positive microörganisms in the feces, and producing a marked improvement in both the subjective and objective symptoms.

The only drawback to their use is the difficulty of preparation. Reagents of especial purity must be procured. From them, solutions of definite concentration must be prepared; and these solutions must then be mixed in definite proportions. For the preparation of the phosphate buffer, two solutions are required, for the preparation of the citrate buffer, three solutions.

In order to overcome these difficulties, search has been made for a buffer solution which is more readily prepared, yet fully as efficient. A solution of sodium metasilicate appears to satisfy these specifications.

Recent work by Bogue (5) shows that the P_H of a 0.6 normal solution of sodium metasilicate is 12.69, of a 0.2 normal solution 12.43. Moreover seven silicates of sodium exist in which the ratio of sodium oxide to silicic oxide is 1:1, 1:1.5, 1:2, 1:2.5, 1:3, 1:3.5, 1:4 respectively. The metasilicate contains the two oxides in the ratio 1:1. As acid is added to the solution of the metasilicate, we may expect the acid to combine with sodium, and thus give rise to silicates containing a higher proportion of silicic oxide. In the silicate with the highest silica content, *i.e.*, $Na_20.4SiO_2$, the P_H is 11.01 in a 0.6 normal solution and 10.80 in a 0.2 normal solution. If sufficient acid be added to combine with all the sodium, the silicic acid may be expected to be liberated as a soluble colloid which very gradually changes into a quite soft jelly.

A research by Henwood and the author, the results of which will be published elsewhere, has included a study of the alkali reserve of 0.4 normal solution of sodium metasilicate. The anhydrous sodium metasilicate content of the crystalline salt was determined by analysis. The solution was then prepared, and analyzed to ascertain the exact mass of anhydrous salt present. By interpolation from Bogue's values, a solution of this normality has a P_H of 12.56. In the determination of the alkali reserve, we titrated 100 mil portions of the 0.4 normal solution of sodium metasilicate with 0.2 normal solutions of a mineral acid (hydrochloric acid) and of certain organic acids which are products of fermentation, including acetic, butyric, and lactic acids.

Phenol red was used as an indicator; and the titration was carried to a P_H of 7.0 as revealed by the indicator. For comparison, similar titrations were made of 100 mil portions of the citrate buffer solution of P_H 12.364.

Mils of 0.2 normal acid required to produce a P_H of 7.0

ACID	SODIUM METASILICATE	CITRATE BUFFER
Hydrochloric	174.44	7.09
Acetic	179.80	7.34
Butyric	180.84	7.29
Lactic	182.87	7.51

These results show that the reserve alkali which becomes available in passing to a P_H of 7.0 is almost 25 times as great in a given volume of the metasilicate solution as in the same volume of the citrate solution.

The therapeutic use of the 0.4 normal solution of sodium metasilicate in the treatment of intestinal diseases is now being studied by Dr. H. M. Eberhard and the author. The results, thus far, are quite promising.

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THE ADMINISTRATION OF A HOSPITAL DIETARY DEPARTMENT

I. The Dietitian

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Administration may be defined as the conduct of any office or employment. Applied to the dietary department of a hospital, it would mean the forming of an organization and the making it function efficiently. There must be no friction, the wheels must move smoothly. The oil must be applied by the executive or chief dietitian.

Departments set in motion for the first time often find imperfections in the working out of the new system. This does not always mean that there are any fundamental errors in its construction. To a discerning chief, the cause of the difficulty is quite obvious. With the pragmatists she can believe that if it does not work it is not true and try another plan. In fact, several may be attempted before the one that fits is discovered. To seasoned veterans in executive work, a slight hitch in the running of the department has no appalling significance. Self-confidence has been attained by many years of wise control and experience. A little attention and thought is brought to bear on the weak spot, a new arrangement tried and the wheels run smoothly.

The beginner in the executive field cannot approach her problem with quite so much tranquillity of mind. A former student dietitian at Barnes Hospital who has since made good in the executive field told me recently that nothing helped her more in the beginning of her career than a statement I had made to my class of students. It was this—no matter what your state of mind or how much you tremble inwardly over situations, never give the appearance of being nonplussed. Keep your chin in the air, think your way out with apparent sang froid. It is a good rule.

The philosopher who said that those whom the gods wish to destroy they first make angry uttered another guide for administrators. Anger impairs straight thinking. It breeds lack of respect. It adds fuel to flame and in the conflagration one's control of the situation goes up in

smoke. Likewise, a soft answer turneth away wrath. A suave voice, tones which are the quintessence of politeness disarm. It seems to me that it is quite fair to say—Never lose your temper unless you do it to produce a desired effect and have with cool head planned the explosion.

Cheerfulness that penetrates to every nook of one's department, a spontaneous radiation of one's inward peace of mind and contentment produces a similar state in one's personnel. Laugh and the world laughs with you.

Persons of naturally happy temperament, of sanguine disposition, confirmed optimists, are often people of abundant energy, vitality and health. If in any work strength and health and energy are necessary qualifications then ten times more are they essential for the administrative dietitian. Students who comtemplate becoming dietitians should feel sure that they have the mental attitude and constitution that strain and worry cannot destroy. For no matter how perfect one's organization, nor how smoothly it runs, there are times when no power can avert the contretemps.

The ability to deal with situations competently comes with experience. Good judgment is formed by mistakes. It is infinitely better in most cases to meet a condition with an error of judgment than not to attempt to meet it at all. Beginners are apt to be discouraged by their mistakes, but it is these same mistakes that can be turned into guide posts which blaze the later trial with signs of do's and don'ts. Courage to remedy one's mistakes, courage to meet disappointments, courage to endure criticism stoically, is part of the armor of a dietitian.

Tact is another qualification without which the administrator is seriously handicapped. Of some people it can be said that they are so tactful, they are liars. Carrying the art too far is not to be desired from the point of view of character. But the instinctive knowledge of how to deal with people without giving offense is certainly an art well worth cultivating. The sensitive mental perception which avoids weaknesses and recognizes assets in contact with others makes just the difference between a gauche and a graceful personality. Queen Elizabeth's political tact was said to be unerring. Most diplomats make their reputation at least in part, by the nicety of their adroitness in meeting the requirements of their problems. Gaining the coöperation of one's own staff, working in connection with other departments, requires an infinite amount of tact.

Tact is of immense importance but common sense is the balance wheel of life and career. People seem to be born with this qualification. It is not an acquired characteristic. The person whose mental cosmos is

not equipped with sane and plain common sense is seriously hampered in business relations. Its lack is easily recognized by others which contributes to the disadvantage of not having it. Fortunately ordinary mortals are usually endowed with a fair amount of common sense. No dietitian is safe without it.

Perhaps the safety valve most indispensable to executives is a sense of humor. The ability to see the funny side of hospital tangles often lightens the load of disheartening experiences which seem to accumulate only to burst with unexpected suddenesss.

In addition to the foregoing qualities, the ideal administrative dietitian has a sound educational background. Her knowledge of the science of nutrition should be extensive. She should be alert to the trend of the times, keep up with current investigation and research in her field as well as allied fields, and be interested in her profession helping to promote its aims and standards. Her familiarity with history, art, literature, politics, and education of today and yesterday would be a measure of her capabilities. From this combination comes poise and charm which mark her as a woman of the world, able to meet people gracefully and to handle people efficiently.

To sum up the salient characteristics which a Hospital Superintendent might require of his administrative dietitian, they are executive ability, savoir faire, self control, cheerfulness, health, energy, good judgment, tact, coöperation, common sense, sense of humor, knowledge of subject matter, and a generally well informed mind. No person could hope to be endowed equally with each quality. Some may be lacking. Some come only with the mellowing influence of years. Some have to be cultivated assiduously. The science of being a success in one's chosen career is the art of living one's life to the utmost.

(*To be continued*)

THE HOSPITAL DIETARY DEPARTMENT—A FORECAST[1]

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(*Continued from previous issue*)

ESSENTIALS FOR AN EFFICIENT DIETARY DEPARTMENT IN A HOSPITAL

There are very definite requirements for the successful development and operation of a dietary department in a hospital. We expect such a department to render an efficient service. A good dietary service presupposes:

1. A well organized department

There must be a well organized department under the direction of a competent director. Great care is necessary in selecting the director of such a department. This person requires special qualifications making her peculiarly fitted for the work. It is natural that we should expect her to have a liberal background of education, to be a graduate of a well recognized school of dietetics, with special preparation and experience in hospital dietetics along administrative and executive lines. It is essential, as in the case of other departmental heads in a hospital, that the incumbent of this position should have a personality which will make her readily adaptable to the innumerable and variable demands that will be constantly made on her. In addition to all this, and of prime importance, she must be diplomatic, tactful, and co-operative in her relations and dealings with others. Like other heads of departments, she should know what good service is and be capable of properly choosing and handling personnel. The very nature of her work requires that she be thoroughly imbued with the idea of service. And finally, she must have ability for leadership which will be reflected in the efficient direction of her department. She must have an anticipating mind—one that has vision and beyond the present day conditions.

I believe that it is preferable, when practical, to have a personal application from the candidate. Her contact when making application

[1] Read before the American Dietetic Association at Swampscott, Mass., on October 13, 1924. Published in Modern Hospital, April, 1925.

should not be limited to the superintendent or one person in the organization. In the selection of such a director I would recommend the following: (*a*) That the candidate make a written and personal application; (*b*) That she be interviewed not only by the superintendent or executive officer in charge, but by other officers of the institution, and particularly, one or more of the clinicians such as, the internist, the surgeon, the specialist, and the clinical pathologist. I mention this particularly inasmuch as the incumbent of such a position has so many extensive relations of importance. Therefore, it is always best to go to considerable trouble of this kind when making such a selection. Not every dietitian can be a good head of a dietary department in a hospital. Not every person can qualify from the standpoint of leadership, initiative, and the many personal qualities required to carry on successfully. The dietetic field today in hospitals needs leadership for there is a great deal of work still to be accomplished.

I would vest in her full authority and responsibility for the entire hospital food service, including purchasing, receiving, storing, preparation, distribution, and service. This is a large order but successful hospital administration today has as its fundamental principle unit responsibility. My policy has always been carefully to select heads of departments who are capable of carrying responsibility and exercising authority in a sensible manner. When this is not obtainable it is advisable to change the incumbent of the position. Departmental interference from outside is detrimental to smooth working, sincere effort, and success. The wise superintendent or general supervisor will not interfere with the details of any department, but select a head for same who will carry responsibility and authority as indicated above.

The duties of the Director of Dietetics are threefold: (*a*) Administrative; (*b*) Teaching; (*c*) Scientific. To carry on these functions and properly discharge such responsibility it is necessary that she surround herself with a staff of competent assistants as required by the size of the institution. The staff must be carefully selected, well adapted to their respective duties, and have instilled into their minds the ideals of a good service—loyalty, industry, economy, efficiency, and honesty, with a personal interest and desire to please their clients.

In selecting your personnel bear in mind that it is always advisable to have them medically examined before they are engaged. Many hotels and cafeterias today require a physical examination of their employees before they are accepted, and at regular periods afterwards. It is equally true that many hospitals very commonly neglect this matter. I was

recently informed of a most excellent, faithful employee, who after serving for four years in the diet kitchen of a hospital, was found to be suffering from an open case of venereal disease, which might easily have contaminated much of the food. I dare say that such a condition as this exists occasionally unless proper precautions are taken. I would therefore recommend a physical examination of all staff when engaged, and a periodic examination afterwards.

The morale in any staff presupposes good living and working conditions. Many institutions today give their help board and lodging. When space and accommodations are available this is satisfactory. Usually, however, we find the staff obliged to sleep in basement rooms, dark, dreary, and uncomfortable, with little or no attention given to the social aspect by the hospital management. Living conditions of this kind do not always promote the desirable kind of esprit de corps in the group. It has been found in many places that a better morale and esprit de corps can be established by allowing employees of this kind to live outside the hospital. In case of married men and women who have their little home and garden within reach of the hospital this system means much to them and will permit of their keeping their home going in a very good manner while their work continues. Working conditions are improving. Better working accommodations, better salaries, and better working hours are evident. Attention to these conditions will undoubtedly improve the working morale of the group.

2. A properly planned and equipped department

In the planning and equipping of the dietary department the hospital management should take the dietitian into consultation and she should be able to advise on location, space, layout, and necessary equipment; all of these based on giving the most efficient service at the least cost. Every hospital should have a well planned dietary department. Many institutions erected in the past, and even today, have noticeably failed in giving attention to the layout required for such a department. Boards of trustees when erecting hospitals would do well to call into consultation more frequently the heads of departments who are obliged to carry on in the institution when it is completed. There is no doubt but that the dietitian could give a great deal of advice in the matter of location, layout, type, and arrangement of equipment, etc. The question of whether or not the dietary department should be on the ground floor or unfortunately, in the basement—as we so often find it, or whether it should be

on the top floor, is one on which I am not prepared to debate at this time, though I have found many institutions having this department on the top floor to be greatly satisfied with that location from the standpoint of odors, noise, and comfort for their employees. I believe the question of location of the dietary department should receive more consideration from you as a group. It is indeed difficult for any architect to lay out a hospital with all the technical departments unless he can consult with those concerned.

Likewise, in the equipment of the dietary department the Director of Dietetics must be brought into consultation. With the great amount of labor saving equipment on the market today great economy in administration can be effected by its use as far as possible. Here, again, an organization such as yours should be advisory to hospitals on the matter of equipment.

3. Food service

We have heard a great deal lately regarding the central food service in hospitals. The advantages and disadvantages of the direct and indirect food services I am not prepared to discuss with you, but theoretically the direct method in which the food goes directly from the dietary department to the patient should be the most economical and satisfactory. The indirect method necessitates the handling of food containers, loading them on a truck, pushing the truck into the elevator, taking it along the various corridors, banging and bumping the plaster and the doors, with accompanying noise and greater beaakage, and finally delivering the food to the subsidiary kitchens for serving to patients. It is a long, tedious process. It seems only natural that we should be endeavoring to develop a more direct service from the dietary department to the patient. It must also be remembered that with the indirect method the food frequently gets cold. When food is reheated we all know it is not so palatable, and thus the patient complains. Food complaints in hospitals are always difficult to investigate and they very readily raise the antagonism of the patient. I believe the fewer people we have to handle the food between the time it is prepared in the kitchen and served to the patient the less confusion, labor, noise, and mistakes we are going to have. I believe the direct method prevents a great deal of discomfort to the nursing staff and reduces the work in regard to the food in various ways. So frequently we find the nurses overheated in the subsidiary kitchen, and suffering many interruptions from the doctors or visitors.

With the direct service we give the Director of Dietetics more control over the food all the way through. The hospital management holds her responsible for the preparation, distribution, and general supervision of the food to the patient. In the serving of food to the patients I believe the time has come when we must develop a more selective service for our patients, allowing them a menu if possible. Almost universally today patients in hospitals are served with a tray of food without soliciting their desires, and too often we have on that tray something that arouses the patient's dislike for the whole meal. This means it must later be thrown into the garbage tin. The introduction of the selective service into a hospital will effect a greater saving and give more satisfaction. It will immeasurably reduce the garbage from the wards and kitchen. An instance is recorded where a hospital which formerly sold its garbage at $200 per month was obliged to reduce that price to $50 after introducing the selective food service for patients. The reason for the reduction was due to the fact that the bulk of food wasted and thrown away was enormously reduced.

It seems only human that we should give every patient some choice in regard to the food we serve him. If you and I are ill we still have our likes and dislikes which are, perhaps, increased by our abnormal condition, and no doubt little things trouble us that in our normal state would not. Not infrequently we have found some little thing on the tray that we disliked. It might be something that is cold, or merely some particularly unpalatable food, but it will have the effect of spoiling our whole meal. I therefore make a plea for a more selective service of food in hospitals.

4. Purchasing, storage, preparation, and distribution

In the large hospitals the purchasing of food is done by the purchasing agent or steward. In the smaller institutions the superintendent will do this himself. I think in every instance, regardless of who does the actual buying, the Director of Dietetics should lay down the quantities and qualities of food required. The steward, even though very efficient and competent, should always consult with the Director of Dietetics as to the quality and specifications of food to be purchased. In many cases we have stewards who are not competent. The quality of the food should be acceptable to the Director of Dietetics. She has to take this raw material and turn it into palatable form so that the patient and staff get the benefit therefrom. Is it

not reasonable that she should be consulted as to the quality of the food purchased?

Food storage in many institutions today needs greater attention. Poorly arranged, inconvenient accommodations, and inefficient refrigeration means wastage at every turn. For the proper storage of food there must be: (1) Sufficient space in the storeroom to lay out the various articles in a systematic manner. (2) A good method of receiving and checking out of supplies. (3) A thorough accounting of the stock on hand. (4) A definite specification for purchasable foods. (5) Sufficient space for the buying in large quantities in order to take advantage of prices. (6) A sufficient number and size of refrigerators to take care of the various perishable commodities. This means at least two or three refrigeration chambers as a minimum.

I believe that the preparation of the food should be entirely under the supervision of the Director of Dietetics, who has the necessary number of assistants, cooks, and other types of employees. If the direct food service is maintained the distribution of the food might be by dumbwaiter or food truck. In either cases the minimizing of time must not be overlooked. It is advisable to have vehicles for transportation of food insulated so as to keep the food warm. The serving of cold food to a patient is a justifiable reason for complaint. All hospitals should take precautions against this.

5. Prevention of waste

Everywhere we are emphasizing economy in hospitals in all things. No other department can be responsible for more waste than that of the kitchen. What are the underlying principles, therefore, to prevent waste? To enumerate them serially they are:

(*a*) The purchasing of good quality of food at the best price. This may be done by tender, by large amounts, or by buying at a particular time when prices are good or on the open market.

(*b*) Proper, adequate storage, and refrigeration to prevent waste and to permit of buying in large amounts.

(*c*) Competent and efficient kitchen arrangements with good equipment placed so as to minimize effort and energy, and a well trained and experienced personnel which can turn out work of good amount and quality.

(*d*) Making the service of food pleasing to the taste and attractive to the sight of the patient. In this respect the meals must be hot and daintily served. It is indeed advisable to have a more or

less selective service if possible in the hospital. To this end the daily menu, mentioned above, is our best solution. One article of undesirable food served to a patient may arouse disgust for all the other food served. Small helpings repeated are better than giving too much at one time and will have a great effect in reducing the volume in the garbage can.

(*e*) Daily supervision of garbage cans in wards and before dispensing of same by a responsible officer of the hospital is exceedingly important. A check-up here must be carried out consistently.

(*f*) The reclamation of all uncontaminated waste or remnants is essential; for instance, the rendering of fat from meats, the final content being used for cooking or for sale, and that which cannot be so reformed for making laundry soap. The keeping of the outer vegetable leaves, bones, etc., which can make a substantial basis for the stock soup kettle. The using of all toast and bread crusts not contaminated for crumbs, dressing, or puddings is an economy worth recognizing, while that which is contaminated can be sold for chicken feed. The making of jelly out of apple peelings and candied orange peel out of orange rinds not contaminated, are processes which are being carried on in diet kitchens today, adding a very splendid object lesson to those in training for conservation and reclamation.

(*g*) The last, but not least, principle laid down is service, the fundamental requirement for the success of anything today. The public today demands service and the diet kitchen must always keep this in mind, for it has a large clientele to serve and satisfy, including the entire staff and roll of patients. Poor food dissatisfies worker and patient and reacts in many ways, resulting eventually in loss of interest in work by the employee, a grouching habit, and puts the hospital in disfavor with the patient who disseminates bad publicity when discharged from the institution. Every detail of the entire system or organization in the dietary department must of necessity be characterized by the highest degree of service.

RECENT ADVANCES IN DIETETICS

The history of dietetics shows a distinct evolution. It is not many years since hospitals did without dietitians. Their work was carried on by a faithful old cook, usually a woman who had a reputation in the community for such work. Later on the matron or housekeeper in larger hospitals assumed more or less control of the food problem and finally, in more recent years the trained dietitian has taken over this

responsibility with her three-fold functions as already mentioned. Thus, dietetics in hospitals has been put on a much improved basis during the last few years.

It is only in the very recent years that dietotherapy has become a substantial part of the dietitian's work, and the medical group of the hospital are now looking to her for co-operation in their work, particularly in such cases as diabetes and other diseases of metabolism. Dietotherapy is a branch of work recognized and required in all hospitals today. It is true that different therapies are becoming more common every day. We have had drug therapy for years. We have also had physiotherapy with its various branches. More recently we have had occupational therapy, and now indeed we hear of book and music therapies. These are all necessary and valuable adjuncts in the practice of medicine. Dietotherapy comes into play in a very substantial way in medicine today. It has brought the dietitian closer to the physician, surgeon, specialist, and laboratory worker. It has brought her more into the field of scientific medicine today. She must do teamwork with the doctor in the treatment of many types of cases.

In her teaching function she must always remember that the student nurse is also a student of dietotherapy. When teaching dietotherapy to her student nurses she should permit them to take the special trays they have prepared to the patient to connect the clinical picture of that patient with the reason for that particular tray or special diet. Frequently, it is true, we see a nurse prepare a special diet in the dietary department and then see somebody else present it to the patient. It is true that in nursingwe have in the past taught a good deal in the classroom on the manikin and other apparatus, but the trend now is to connect the lecture on pneumonia with a case of pneumonia, and that on typhoid with the patient suffering from typhoid. Today teaching is more clinical in nature than previously.

Dietotherapy will fail unless hospitals develop a proper follow-up of cases treated in the wards and discharged from hospitals. I can remember cases of diabetes treated in the hospital wards which did do very well. The sugar cleared up, they were discharged and sent home with instructions. Not infrequently have these patients returned just as bad as originally. Indeed, metabolic cases are apt to go on in a cycle in this respect unless a proper follow-up can be instituted. Some hospitals have arranged a special diet room where patients can come and have their lunch and all their meals if so desired, and still continue with their work down town. This has proved fairly satisfactory but not so

much as having follow-up work carried directly into the home, club, or hotel where the patient eats. A dietitian in any community assigned for follow-up work on all types of cases of this kind will do much to stabilize hospital results. Therefore, let me urge on you to stimulate the development of follow-up work for dietotherapy patients. Dietotherapy, now receiving so much interest, is becoming a more and more important problem daily and no doubt the future holds interesting developments for this particular phase. That is one of the reasons why we need women well trained in dietetics.

PRESENT NEEDS OF THE HOSPITAL FIELD

As already stated, you have a large field to cover. Future development warrants at present your earnest attention and constant group deliberations such as you are having at this meeting. One of the problems you must face at once is dietetics in relation to the smaller hospitals. What are we going to do about dietitians for the large number of smaller hospitals all through this country? We know that they need a service of this kind. We have during 1924 in the organization which I represent, examined approximately 1,500 institutions under one hundred beds, many of them being without an organized dietary department or a dietitian. They all have a distinct dietotherapy need. They all need well balanced diets for the whole group in the institution. How, therefore, are we going to solve this problem without the trained personnel who understand how to go about it? Probably it might be managed by grouping the institutions, especially where transportation service can be readily afforded. A number of hospitals are endeavoring to secure the services of travelling instructors in order to give the nurses in training the necessary instruction. To a certain degree this is meeting the needs of the training school but it does not always cope with the needs of the patients in the institutions. This problem warrants much interest and thought.

Another need of the field today is that of more trained dietitians—dietitians trained in hospital work. It is a fact that the larger institutions all over the United States and Canada are not all opening their doors to graduate dietitians who are anxious to secure post-graduate work in hospital dietetics. If the large hospitals would co-operate more in the work of training hospital dietitians it would be easier to fill the present need, and the number of trained hospital dietitians would be eventually materially increased.

You are a group interested in the dietetic problems of this great country. You are an expert group to whom we look for standards in dietetics—standards in planning, standards in equipment, standards in personnel, standards in service, standards in teaching and administration. Do not develop standards which are impractical and difficult to carry out. Start with the lowest or minimum, the least which any hospital should have. Help these hospitals to start minimum standards, and if they are practical, adaptable, and not compulsory you will find that they will go on increasing from year to year till the present maximum standard is passed. When we have requests for information on dietetics in our Hospital Information and Service Department I would like to turn to your Association as an authority on this work. We are all looking to you to develop proper standards in the different phases of your work as indicated. The American College of Surgeons has been carrying on the hospital standardization movement for a number of years. So far only minimum standards have been presented and these have been acceptable all over because they were voluntary, practical, adaptable, and adjustable and, finally, they aim always at service to the patient. Therefore, build up your standards based on service to the patient, and let us all help you to introduce them and develop them in the various institutions. We must look to you for these standards as our authority. In my work of standardization of hospitals I know that if you endeavor to improve the service by these standards we will find our hospital standardization movement more effective.

Your efforts here and at home in your various departments will only be a success insofar as we can gauge the results obtained through your service as reflected in the good care of the patient. Just so far as the service you render betters and benefits the patient, just to that extent is your service good.

On behalf of the organization which I now represent, the American College of Surgeons, and on behalf of the American Hospital Association which I represented up to a few days ago, I wish you every success in your work and hope that you will continue to grow and develop along proper lines. I hope you will feel that you are now a well recognized group in every hospital where you are organized. I hope you will also realize that you are each carrying the triple functions mentioned above—the greater part of your task lies before you, but let me assure you that we are right with you and ready to co-operate with you and work with you so long as your work is practical and close to the line of good service to the patient in your hospital.

CRUDE FIBER IN FOOD

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In the dietetic treatment of chronic atonic constipation of long standing the maintenance of a steady level of "cellulose" intake is often important. It is possible to follow faithfully the usual direction to eat plenty of fruits and vegetables and to choose the foods in such a way as to get no results because of a low level of fiber intake or a level that varies greatly from day to day.

The invaluable Bulletin 28 as well as the few other sources of information on the subject omits many foods and generally omits specifications as to whether the edible portion used included skins and seeds such as are sometimes eaten and sometimes discarded. A few of these desired data are here reported.

The method employed is a modification of the one adopted by the Association of Official Agricultural Chemists. It is described as the "one filtration method" by C. K. Francis (1) because it eliminates one of the filtering processes involved in the official method. It was used here after trials of various other methods because it seemed to be the simplest and least time consuming and seemed to give results comparable to those obtained by the official method although somewhat lower. (See table 1.)

According to Bidwell (2) the amount of crude fiber obtained from any given sample is dependent on the method employed. Since slight variations in the procedure noticeably influence the results, reference should be made to the original detailed papers for methods used in this series.

The foods used were purchased in local markets or obtained from hospital stores. They were weighed on tared evaporating dishes and after being cut into small pieces were brought to constant weight on the water bath. For fruits containing much sugar the process was slightly altered. These foods, after drying on the water bath, were treated with alcohol and chloroform and dried in an oven at 100°C. to a weight constant within 3 mgm. in one hour. Canned fruits were drained for one minute before weighing. Except in two instances duplicates were run in

determining water content. In the fiber analysis, duplicates or triplicates were run in all cases. The range in check analysis is given in the accompanying table, together with the number of checks run. In most cases the greatest range in checks was 0.1 per cent, but in grapes, figs and bran which contain a large amount of fiber, the variation was 0.6 0.8 per cent. Only those foods taken from different sources are counted as separate samples. The number of samples, the number of checks on each sample, the range in results and the average results are found in table 2.

Whenever figures from other sources were available they were included in the table for comparison. It seems evident that there is little parallelism between them and the figures presented here. In some cases, as grapes, our results were higher, and in other cases, peaches, celery, they were lower

TABLE 1

MATERIAL	OFFICIAL METHOD		FRANCIS METHOD		DIFFERENCE
	Grams fiber	Per cent fiber	Grams fiber	Per cent fiber	
					per cent
Cotton	0.8781	87.81	0.8706	87.06	0.75
Grapefruit	0.0353	0.243	0.0330	0.227	0.016
Tomatoes	0.14444	0.72	0.1414	0.707	0.02
Oranges, pulp	0.0258	0.25	0.0200	0.020	0.05

than the published figures. But since in the majority of analyses from either source but one sample was used there seems to be little possibility for generalization. However, with the exception of two instances, the food analysed either fell within the range of those published or was not far from it. The most widely divergent results were obtained with peaches in which but one fourth of the published values were found.

The per cent variation in fiber figures for different samples of the same food was calculated for fruit and vegetables from Bulletin 28. It was found that the variation ranged from 0 to 1900 per cent but that the majority of variations ran between 100 and 300 per cent.

Probably one of the most important causes for this wide variation is the variety of the fruit. Grapes, according to Bulletin 28 (one analysis, edible portion) contain 4.3 per cent fiber, and according to Hutchison (3), 2.5 per cent. From Concord, grapes with seeds and skins, an average of 5.5 per cent fiber was obtained and from Malaga, 2.4 per cent in this series. It is also seen that white cherries yielded more fiber than red ones.

TABLE 2

FOOD AND DESCRIPTION	NUMBER OF SAMPLES	NUMBER OF ANALYSES	WATER AVERAGE PER CENT	FIBER RANGE PER CENT	FIBER AVERAGE PER CENT	FIBER AVERAGE PER CENT OTHER SOURCES
Apricots, dried	1	3	30.76	2.33 – 2.43	2.39	——
Apricots, canned	1	3	75.9	0.566– 0.58	0.57	——
Apples Jonathan, fall						1.2 (0.9–1.4)†
Apples with skin, small	2	5	89.67	1.07 – 0.93	0.98	
Apples with skin, medium	1	2	88.41	1.31 – 1.26	1.29	
Apples with skin, large	1	3	89.31	0.73 – 0.81	1.76	
Apples without skin, small	1	3	89.80	0.49 – 0.50	0.50	
Apples without skin, medium	1	3	87.96	0.55 – 0.58	0.57	
Apples without skin, large	1	3	89.21	0.40 – 0.45	0.42	
Bran plain, bulk	1	2	15.358	9.35 – 9.99	9.67	18.H
Bran Kelloggs Krumbled	1	2	6.16	9.2 – 8.9	9.05	
Bran Cellu Diabetic Wafers	1	3	21.3	3.80 –23.97	23.86	
Bread, graham	1	2	30.19	1.24 – 1.04	1.13	1.1 (0.6–1.8)
Celery hearts	1	2	89.89	0.49 – 0.49	0.49	1.5H
Celery, whole stalks	2	4	94.5	0.48 – 0.69	0.59	
Figs, bulk, dry	1	3	24.4	6.34 – 7.11	6.76	7.3H, 6.2H
Figs, bulk soft	1	3	27.7	5.30 – 5.52	5.47	
Cherries, red canned	1	3	90.45	0.27 – 0.28	0.27	
Cherries, Queen Ann* (white)	1	3	81.65	0.44 – 0.45	0.45	
Grapefruit	1	2	93.1	0.248– 0.239	0.24	
Grapes, Concord, with skins and seeds:						4.3† 2.5H
Grapes, Concord, small	2	4	79.13	5.70 – 6.34	5.69	
Grapes, Concord, large	1	3	84.58	5.04 – 5.58	5.32	
Grapes, Concord, Malagas	1	2	84.8	2.78 – 2.88	2.83	
Grapenuts	1	2	4.1	1.39 – 1.59	1.49	
Malt Breakfast Food	1	2	8.96	0.75 – 1.03	0.89	
Peaches, fresh with skin	2	5	89.7	0.83 – 1.13	0.93	3.6† 3.4
Peaches, fresh without skins	2	5	87.6	0.50 – 0.72	0.61	
Peaches canned, large	1	2	78.8	0.81 – 0.88	0.84	
Peaches dried*	1	3	23.60	3.55 – 3.84	3.71	
Pears, canned	1	3	81.0	1.23 – 1.26	1.25	
Pettijohn's Breakfast food	1	3	9.95	1.15 – 1.35	1.23	
Plums, canned green gage AP*	1	3	73.00	1.05 – 1.11	1.08	
Prunes, dried	1	3	68.00	3.88 – 3.90	3.89	
Oranges, in sections	1	3	88.28	0.79 – 0.83	0.80	
Oranges, pulp	1	3	89.9	0.18 – 0.23	0.20	
Tomatoes, with skins:						1.1H
Tomatoes, small	2	5	95.15	0.63 – 0.87	0.73	0.6 (0.5–1.2)†
Tomatoes, medium	1	2	95.86	0.412– 0.413	0.41	
Tomatoes, large	2	6	95.2	0.61 – 0.71	0.66	

* Analysed by Phyllis Mendenhall.

† U. S. Dept. of Agriculture Bulletin No. 28.

H = Hutcheson.

TABLE 2—*Continued*

FOOD AND DESCRIPTION	NUMBER OF SAMPLES	NUMBER OF ANALYSES	WATER AVERAGE PER CENT	FIBER RANGE PER CENT	FIBER AVERAGE PER CENT	FIBER AVERAGE PER CENT OTHER SOURCES
Tomatoes without skins:						
Tomatoes, small	1	3	95.72	0.46 – 0.53	0.50	
Tomatoes, medium	1	2	96.7	0.207– 0.203	0.20	
Raisins, seeded	1	3	31.3	0.63 – 0.66	0.65	
Raisins, seedless	1	2	28.5	1.45 – 1.48	1.47	
Raisins, cluster	1	3	19.0	12.23 –11.91	12.08	
Raspberries, red, canned	1	3	81.0	6.82 – 6.97	6.83	

For proper comparison the condition of the fruits when analysed should be as nearly as possible the same. Food which has been stored a long time and lost moisture will yield a higher per cent of fiber. Figs of the same kind, but one sample older than the other and consequently less moist, were analyzed. The dry ones yielded 6.76 per cent and the moist ones 5.47 per cent fiber. It would seem natural that climate and weather conditions should effect the fiber content as seen by the apparent difference between Michigan and California apples and by radishes grown in the spring and the fall. But no information on this point could be found.

THE INFLUENCE OF THE SIZE OF FRUIT ON THE FIBER CONTENT

The variation of fiber content with the size of the fruit was studied in three cases—tomatoes, apples and grapes. From the table it is seen that the small fruit yielded relatively more fiber than the large ones, but the figure for medium sized fruit did not in either case fall between the two. Medium sized apples, both with and without skins, contained more fiber than the small ones. While in the case of medium sized tomatoes, the fiber yield was less than either of the large ones or the small ones. Only small and large grapes were analysed and the former yielded on the average of 0.4 per cent more than the latter.

THE INFLUENCE OF THE REMOVAL OF SKINS ON THE FIBER CONTENT

The results of removing the skins from fruits is given in table 3.

The results, although few, indicate that in peeling, fruits loose from one-half to one-third of their fiber content. In removing the divisions from oranges 75 per cent was lost. It must be clear, however, that these

comparisons were made on the assumption that foods of the same kind, size and general character and from the same lot contain comparable amounts of fiber.

TABLE 3

FOOD	PER CENT FIBER WITH SKIN	PER CENT FIBER WITHOUT SKIN	PER CENT LOSS
Apples, small	0.98	0.50	49.0
Apples, medium	1.29	0.57	55.8
Apples, large	0.76	0.42	44.0
Tomatoes, small	0.76	0.50	34.0
Tomatoes, medium	0.41	0.20	52.5
Oranges (in sections)*	0.80	0.20 (pulp)	75.0
Peaches, medium	0.98	0.66	32.6

* Without outer skin.

SUMMARY

Twenty-three different foods of various sizes and conditions were analyzed. Of the forty-five analyses reported, thirty-five are of foods for which fiber figures are not available, or, available only without specifications as to size and kind analyzed.

The method used was the one described by C. K. Francis which was found to give results comparable to the official method.

A comparison with the results with existent figures show little parallelism. These differences may be due, first, to a lack of uniformity in procedure; second, to a lack of comparability of samples as to size, variety, freshness and state of preparation; third, to the influence of growing conditions on the fiber content.

The removal of skins from apples, peaches, and tomatoes resulted in a loss of from one-third to one-half of the fiber.

The size of the fruit analyzed did not influence the per cent of fiber consistently except in rather extreme sizes.

In fiber, as in other constituents, different samples of the same food vary widely. But the recorded figures are nevertheless of distinct value in planning "high cellulose" diets for correcting atonic constipation.

The writer gratefully acknowledges many helpful suggestions from Dr. Ruth Wheeler and the kindness of Dr. R. B. Gibson for the use of his laboratory.

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A SUMMARY OF DIET IN DISEASES BY MEANS OF CASE STUDIES

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The ultimate aim of the dietitian who trains student nurses is to teach normal dietary standards and diet calculation, so that the nurse may be able to adjust the normal diet of the individual to meet the requirements of the therapeutic diet prescribed.

In order to accomplish this it seems necessary to allow the student nurse to assume some of the responsibility of planning, serving and charting diets as ordered. This work must be done under the direct supervision of an experienced worker, as nothing can be gained for the student nurse, and much harm can be done to the patient and the institution by errors in service, and careless work.

Therapeutic diet orders are written by the physician in terms of food values, and are translated by the student nurse and the dietitian into foods acceptable to the patient. The student nurse serves the diet planned, visits the patient after each meal, and checks his tray for uneaten food. Here she is taught that the value of the service depends upon her ability to serve food which will be eaten by the patient. She then charts the diet as eaten, and learns from consultation with the dietitian the results expected for the patient from the diet. The student must be taught to follow the patient's chart and to interpret laboratory findings in order that she may appreciate the results of her diet work.

Little time is spent in actual food preparation. The object of the course is not to afford experience in cooking since the nurse has previously had her training in foods and cookery. The work given her should be of educational value and closely correlated with the medical care and laboratory findings of the patient. At no time should the student feel that there is an abrupt break in her nurses' training when she is assigned to the diet service.

The student is thrilled with the first results she finds from the diet she serves, and it is extremely interesting and often amusing to hear her teaching her patients most earnestly why they should eat the diet she serves. To be sure she makes mistakes, but she is cheerful about correct-

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ST. MARY'S HOSPITAL
ROCHESTER, MINN.

PATIENT'S NAME H. K. DEPARTMENT Medical

ROOM NUMBER 235 STUDENT Olive Nash

CLASS 1924

HISTORY Male - age 29 Since 9 years of age has suffered with headaches once every three months until 20 years old. They then came oftener until at present occur 1-2 times a week. Are more severe and last 1-3 days. Required 3-4 doses morphine for any relief. Had a weakness in vertex 3-4 days before onset of headache as a severe pain like something trying to power its way out. Acetanelid, luminal, opium, peptone B for attacks. Morphine gave most relief. Showed sugar in urine once three months ago. History of migraine in father the same for transmission from father to son. On April 16th had very severe headache. Given 20 units Insulin. 2½ hrs. later 20 units more with no effect on headache. On April 18th had another attack. Given 30 units Insulin at 11 AM. No dinner. No effect on headache. 60 gms. Calcium lactate given and patient gradually began to feel some better. Decided to try basic diet as last resort for treatment. P.H. before beginning basic diet was 4.6 Patient was also chronically constipated.

DAY OF DISEASE	April 20 A.M. 1	P.M.	21 A.M. 2	P.M.	22 A.M. 3	P.M.	23 A.M. 4	P.M.	24 A.M. 5	P.M.	25 A.M. 6	P.M.	26 A.M. 7	P.M.	27 A.M. 8	P.M.	28 A.M. 9	P.M.	29 A.M. 10	P.M.	30 A.M. 11	P.M.	1 A.M. 12	P.M.	2 A.M. 13	P.M.
SYMPTOMS: TEMP.	97	98.2	97.6	97.6	98	98	97.8	98	98	97.6	98	98	98.2	98	98	98.6	98.4	98	98	97.4	97.2	98.6	97	97.4	97.2	98.6
PULSE	80	84	84	80	78	76	76	70	72	74	76	76	78	84	80	80	80	80	78	76	76	78	74	78	76	68
RESP.																										
Headache	Four days ago patient had the severe attack with no relief from Insulin		No headache		No headache		No headache		No headache		No headache		No headache		Slight headache for first time since basic diet was started.		No headache		No headache		No headache		No headache		No headache	
Do	Very nervous				Not		Not		Not		Not		Not		Slight nervousness		Not		Not		Not		Not		Not	
Nervousness	with headache		Better		Noticeable		Noticeable		Noticeable		Noticeable		Noticeable		apparent		Noticeable		Noticeable		Noticeable		Noticeable		Noticeable	
Blood Pressure	150 / 90																								105 / 95	
WATER and FOOD INTAKE: DIET	Basal		Basal		Basic 2nal. Rest		Basic 2nal. Rest.		Basic 2nal. Rest.		Basic 2nal. Rest.		Basic 2nal. Rest.		Basic 2nal. Rest.		Basic		Basic		Basic		Basic		Basic	
Carbo.	20		20		206		206		206		206		206		206		238		238		238		238		238	
Protein	47		47		55		55		55		55		55		56		60		60		60		60		60	
Fat	147		147		125		125		125		125		125		125		140		140		140		140		140	
Cal.	1642		1642		2232		2232		2232		2232		2232		2232		2523		2523		2523		2523		2523	
Salt	Not limited																									
Fluid	Not limited																									
Weight			185 ½		183				181 ¾								182								182	
MEDICATION: Calcium Lactate			gr. XX T.I.D.		gr. XX T.I.D.		gr. XX T.I.D.		Misc.																	
Dose	20		20		20		20																			
Total	80		140		200		260																			
LABORATORY FINDINGS: B.M.R.	April 15th +3																									
Amt. Urine	1225		1350		1600		950		450		1000				775		1850		2000						1700	
Urinalysis: Sp. Grav.			1028		1026		1025		1026		1026		1029		1026		1024		1020		1028		1026		1028	
Reaction			Acid		Acid		Acid		Acid		Acid		Acid		Acid		Acid		Acid		Alk.		Alk.		Acid	
Sugar			ν		ν		ν		0		0		0		Faint		Faint		Faint		Faint		Faint		Faint	
Diacetic Acid			0 T.H. 5.2		P.H. 5.95		6.2		5.7		5.2		5.7		6.2		5.95		5.95		7.1		7.1		6.3	
Stools	ν		ν		ν		ν		ν		ν		ν		ν		ν		ν		ν		ν		ν	
Blood Chem'ry	Wasserman Negative		Blood Sugar .09 - fasting																						Blood Sugar .091 - fasting	
MISC.	Diet to endeavor to furnish bulk to produce normal bowel movement				Alkalinity of body fluids impossible with patient losing weight and using body protein.		Diet increased										Calories increased. To keep up weight. Patient still using body protein. Acid urine.						Diet has produced normal bowel movement daily and constipation overcome			

FIG. 1

SUMMARY

NAME OF DISEASE Migraine Headaches.

ETIOLOGY Not Known

PATHOLOGY No pathological changes in the body Tissues

CHARACTERISTIC SYMPTOMS Periodicity of headaches coming on from youth with depression following. Severity of attacks with no nausea, no blurred vision.

METHOD OF DIAGNOSIS Headache with none of following: nausea, vomiting, scotomae, diplopia, blurred vision, photophobia, vertigo, muscular Twitchings.

TREATMENT Patient had tried acetanelid, luminal, morphine, peptone with no lasting effect. Insulin to 40 units with no effect. Calcium Lactate gr. 60 helped. Basic Diet started. Alkalinity of body fluids impossible with Calcium. (Disc.) or patient losing weight. (calories increased)

DURATION Since Child hood.

COMPLICATIONS and SEQUELAE During month of treatment – three mild attacks. Previous to period of diet – eight severe attacks per month.

PREVENTION Not Known – unknown etiology.

FINAL DIET INSTRUCTIONS Basic or alkaline diet prescribed. Patient instructed to save 24 hr. urine specimen which he was Taught to test daily with indicators for P.H estimation, and to adjust his diet to keep urine at almost neutral ph. Bulk of diet regulated to produce a normal bowel movement each day. Fat in diet adjusted to hold normal weight. Alkaline foods prescribed in abundance. Acid foods allowed in small quantities as long as urine was alkaline.

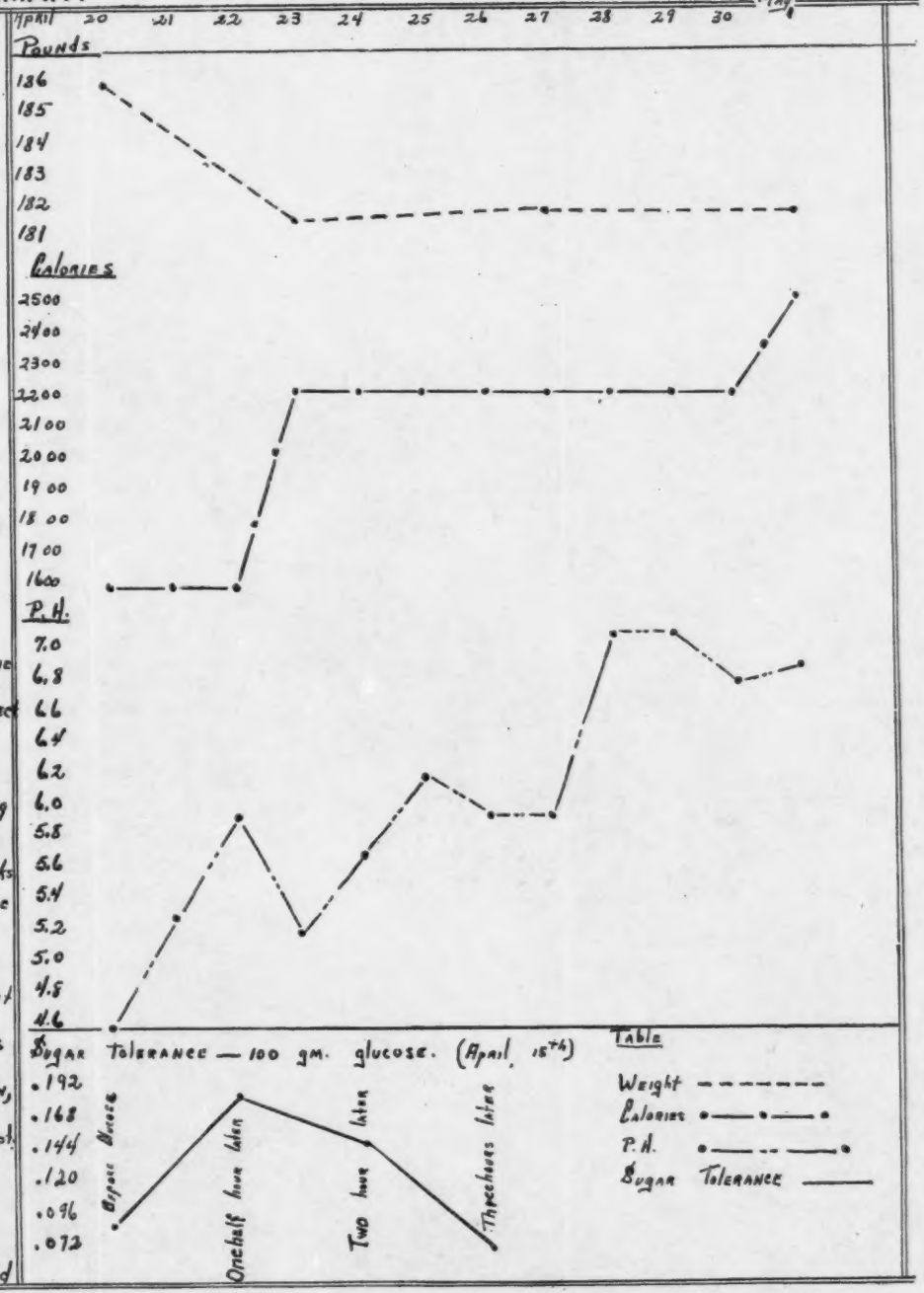

FIG. 2

ing them and extremely conscientious in carrying out her orders when she understands their value.

As a means of guiding the nurse in her work in diet therapy and also as a means of keeping a concise and permanent record of cases studied from a dietary viewpoint, a diet history sheet was developed from a medical history sheet, originally devised by Sister Domitilla. This plan of teaching by means of case studies is described in Vol. XXIV, No. 7, April, 1924, of the American Journal of Nursing. Quoting from the above paper, the advantages of such a method, briefly stated, are:

1. It coördinates teaching with experience and correlates knowledge with its application.

2. It develops the students' power of observation, analysis and inference and her ability to report conditions accurately.

3. It stimulates the student to teach herself and to utilize her wonderful opportunities of learning in her great laboratory, the hospital.

The tabulated record represents one of these dietary case studies. The space at the top of the sheet is for a brief history of the patient. Spaces are provided for temperature, pulse and respiratory curve. There are spaces for recording the symptoms which are most evident in diseases requiring careful dietary regime. The kind of diet ordered is charted. The diet prescription in terms of carbohydrate, protein, fat and calories is indicated as well as the salt and fluid allowance. The body weight is charted near the caloric intake to call attention to their close reation. Space is provided for medications to enable the student nurse to draw her own inferences as to the effect of drugs on diet and vice versa. The laboratory findings are of utmost interest and importance. The effect of the metabolic rate on food intake and weight is noted. The amount of urine will be seen to vary greatly with food and fluid intake. Urinalysis reports will acquaint the nurse with the guides used by the doctor in adjusting the direct prescribed. Checking stools with medicinal orders will show whether the bowels are being managed by diet or medicines. The value of blood chemistry in treating disease with diet is readily taught with this chart. In some cases, gastric analysis will show the effect of diet while in other cases the blood pressure curve will illustrate its value (fig. 2). On the reverse side, we have a summary of the case, with a graph whereon may be plotted a blood sugar curve, a blood pressure curve, a pH curve or a weight curve, depending on the kind of case studied. Space is also provided for a brief record of final diet instructions in order that the student may understand how to adjust the

hospital diet to meet home conditions. The nurse who carefully follows the patients' progress and faithfully records the diet, the symptoms and the laboratory findings from day to day as described above, cannot fail to derive considerable knowledge. When the record sheet is completed, it is examined by the dietitian. The student nurse is then questioned about the case studied. This conference is of mutual benefit as it affords an opportunity for the dietitian to advise the nurse concerning reference reading, and it enables the dietitian to note the weak points in her service of teaching the nurse who is expected to have a clear understanding of the case and to give an intelligent discussion of the patients' progress as indicated by the symptoms and laboratory findings. The case history belongs to the student and is filed with her notes in dietetics, as a source of future reference.

THE FUNCTION OF THE HOSPITAL DIETITIAN

JOSEPH B. HOWLAND, M.D.

Superintendent, Peter Bent Brigham Hospital, Boston

The two extremes of hospitals today are those which may be rated as boarding houses for the sick, and the teaching and research institutions. Between these, there are many variations.

It is customary in practically every hospital to have at least one person with the title of dietitian. It is quite obvious then that the duties of the dietitian will vary in accordance with the type of hospital in which she is employed.

In some institutions, the dietitian is little more than a practical supervising kitchen matron with an elementary knowledge of the chemistry of food. In others, she occupies a position in some respects not unlike that of the druggist in that she is accurately compounding food elements for particular therapeutic purposes, just as the apothecary compounds the prescriptions sent to his department. In addition to being able to accurately compound food elements, it must not be forgotten, that the individual case in hand must be closely studied. As there are many different ways in which the required food elements can be furnished, according to individual tastes and requirements, there is no way that the physician can accurately pass this along to the dietitian, and she must be resourceful in making the necessary changes in her prescription in order that the patient will take it.

I would place the ability to handle food prescriptions, with due regard to the individual, as the most important function of the modern hospital dietitian. It is generally customary also to place in her charge the over-sight of the kitchen and serving rooms for the officers and employees as well as for patients. She must, of course, have practical ability to furnish attractive, well balanced menus at reasonable cost, and better than her predecessor, the kitchen matron, because of the dietitian's knowledge of the chemistry of food. Her success in this department, however, will depend as much on her natural ability and common sense as on training.

The dietitian will, of course, be the teacher of dietetics and cooking to the Training School, and should be able to teach those classes of

patients whose treatment is largely dietary. She should be competent to furnish practical diets for any individual for whom the physician has prescribed from the under-nourished to the obese.

Purchasing food supplies may or may not be a duty of the dietitian. If not, there should be close coöperation between her department and the purchasing department in order that advantage may be taken of seasonable produce and favorable prices.

THE FUNCTION OF THE HOSPITAL DIETITIAN

MARY SWARTZ ROSE

Professor of Nutrition, Columbia University, New York City

"The apprenticeship of the dietitian is far too short. If she will only get training enough, she will function."

THE FUNCTION OF THE HOSPITAL DIETITIAN

FRANCIS W. PEABODY, M.D.

The Boston City Hospital

From the point of view of the physician in a large general hospital the functions of the dietitian fall into two categories which may perhaps be spoken of as the Science and the Art of Dietetics. The Science of Dietetics is unquestionably the field in which clinicians have chiefly interested themselves in recent years, and there is a general tendency to regard the dietitian as a person whose sole duty is to provide accurately weighed and measured diets, which fulfill the scientific requirements of special cases of disease. This is, of course, the logical and necessary outgrowth of the recent developments in our knowledge of the disorders of metabolism, and it is highly important that every institution, which pretends to give the best medical care to its patients, should have attached to it a dietitian who understands food values as well as the methods of calculation and preparation of diets of special constitution. Wherever work of an investigative nature is being carried on, and where physicians and chemists are attempting to gain further insight into the many problems of metabolism that still remain obscure, the coöperation of a very highly trained dietitian is essential, for the whole success of the investigation may be primarily dependent on the conscientiousness and accuracy

with which the food is prepared. The Diet Kitchen becomes more and more the Dietetic Laboratory and as such it has the function of contributing its special knowledge and technic to the care of the sick and the investigation of disease, in exactly the same manner as do the other laboratories connected with the hospital.

In laying stress on the scientific aspects of dietetics, however, it is of great importance that the Art of Dietetics should not be neglected. The function of the hospital is to treat patients, and in the treatment of patients the problem of nutrition is often predominant. This is, of course, generally recognized, but the fact remains that in most large institutions the attention to the dietary needs of the individual patient, and the adaptation of meals to the patient's taste and appetite is all too often overlooked. The great number of patients and the limited nursing staff will usually explain this lack of care but they cannot wholly excuse it.

For each patient whose recovery requires an accurately weighed diet there are usually many whose recovery would at least be hastened by an appealing diet. How often one sees a pathetic sick woman without an appetite turning away from a tray overladen with food enough for a longshoreman! The doctor should have ordered a different diet? Perhaps so, but in any case, the needs and desires of the patient should have been taken into consideration by the person who served the diet, and a few of the more tempting bits brought to her so that her appetite would have been aroused instead of being further suppressed. The major part of this problem falls upon the nurse, but the nurse must be superintended and instructed in all the tricks and devices which can be used in making diets more attractive and appealing. This is one of the things that she can learn from the dietitian, and in her career as a private nurse, she will be as appreciative of this aspect of her dietetic training as she will be of her knowledge of calories. The influence of the dietitian must spread out from her laboratory kitchen to the bedside of the patient in the ward, and she must accept for herself the double function of infusing through the hospital the spirit of both the Science and the Art of Dietetics.

READING NOTES

MRS. OCTAVIA HALL SMILLIE

Former President of the American Dietetic Association

NUTRITION WORKERS TAKE NOTICE. Dr. Henry C. Sherman in writing for the Red Cross Courier says, "I would plead for open-minded and whole-hearted recognition of the prime importance of *all* the essential factors in nutrition. All nutrition work, to be worthy of our present knowledge and opportunity, must stand four-square upon equal recognition of calories, protein, mineral elements, and vitamins. A well-trained nutrition worker, as well as a good food supply, is essential to the best results in a nutrition-for-health campaign; and good nutrition teaching will bear fruit in superior health, both in the present and in the future."

In practice we do not buy or eat calories, proteins, mineral elements or vitamins as such. We buy and eat articles of food helpfully grouped according to their most significant nutritive characteristics from the standpoint of our present knowledge of food values as follows:

1. Breadstuffs and other grain products.—Economical sources of energy and protein but not satisfactory in their mineral and vitamin content.

2. Sugars and fats.—Chiefly important from the nutritional standpoint as supplementary sources of energy, although some fats are also important as sources of fat-soluble vitamin.

3. Meats (including fish and poultry).—Rich in protein or fat or both, but showing, in general, the same mineral and vitamin deficiencies as do the grains.

4. Fruits and vegetables.—Greatly variable in their protein and energy values, but highly important as sources of mineral elements and vitamins.

5. Milk.—Important as source of energy, protein, mineral elements and vitamins. The most efficient of all foods in making good the deficiencies of grains and in insuring the all-round adequacy of the diet.

It thus becomes apparent why a dietary, made up as so many American dietaries are too largely of breadstuffs, meats, sweets and fats may be satisfying to the palate and to the traditional demand for variety; may furnish ample quota of protein and calories with fats and carbohydrates in any desired proportions and yet may be inadequate because of faults in its mineral and vitamin content. We now understand how it is that fruits, vegetables, and especially milk in various forms, serve (in ways which until recently could not be fully appreciated) to make good the deficiencies of breadstuffs, meats, sweets and most fats.

FEEDING THE FAMILY PROPERLY. In recent edition of his book, "Food Products," Prof. Henry C. Sherman states that in his own household one-fourth or more of the money spent for food is spent for milk, about one-fifth for vegetables and fruits, and less than one-sixth for meat, poultry, and fish. The Food Administration, in its educational program, suggested a family food budget as follows: Divide your food money into fifths.

One-fifth, more or less, for vegetables and fruit
One-fifth, or less, for meats, fish, and eggs
One-fifth, or more, for milk and cheese
One-fifth, or more, for bread and cereals
One-fifth, or less, for fats, sugar, and other groceries and food adjuncts

BASAL METABOLISM. In recent study of girls Dr. Grace MacLeod of Columbia University has found the average basal heat output per kilogram of body weight in twenty-four hours to be age 11, 29.2 calories; age 12, 32.3; age 13, 31.1; age 14, 36.7. Girls then

are not so different from boys so Children's Hospital dietitians remember to feed them well.—*Journal American Medical Association*, January 24, 1925.

Simple Method of Determining Reduction Processes in Feces. Dr. Olaf Bergeim working with dogs at University of Illinois College of Medicine has found a simple method for estimating reduction processes in the intestine by determination of the amount of unreduced ferric oxide found in the feces after digestion.—Olaf Bergeim, M.D., *Journal American Medical Association*, January 17, 1925.

Cost of More Nutritious Bread. It is believed that the great quantities of skimmed milk and whey unused by creameries if utilized by bakeries to make a milk loaf of bread would prove a great factor in prevention of deficiency diseases. It would, however, increase the cost of bread a cent or two.—I. K. Russell, Editor Baking Technology, *Nation's Health*, February 15, 1925.

The Use of Coffee. Prof. Samuel C. Prescott of Institute of Technique, Boston who has worked three years on coffee and its preparation says, "Coffee is a beverage which properly prepared and rightly used may be regarded as the servant rather than the destroyer of cilivization."

Care in Packing Fish. The recent press release in regard to Salmon seizures from the Officer of the Secretary of Agriculture proves of great interest to all of us who use canned fish. In the trial the verdict of the jury in every case upheld the main charge of the government which was to the effect that part of the canned salmon was decomposed and was spoiled at the time it was caught. Arrangements are being made to watch more closely the fish as they are released from the cannery. Nearly all Alaskan canneries plan to place identification marks on their cans so that those packed at any time may be segregated.—*American Journal of Public Health*, October, 1924.

Commercial Vitamin Preparation. Of the commercial vitamins tested, 40 per cent were useless, 25 per cent were superior in their potency when fed to white rats in comparison with dried brewer's yeast.—*American Journal of Public Health*, October, 1924.

Pellagra and Brewer's Yeast. A study of pellagra preventives.

a. Liberal supply of protein of good biological quality does not prevent, though it may modify pellagra.

b. In the prevention of pellagra there is concerned an unappreciated dietary factor which is designated as factor P-P. This is effective without protein.

c. Factor P-P may be the sole essential in prevention of pellagra.

d. Factor P-P is present in brewer's yeast, in milk and in lean beef.

It seems likely that after so long a time our country will be able to treat pellagra successfully and eventually reduce it to a minimum. Joseph Goldberger and W. F. Tanner, Surgeons, U. S. Public Health Service, *Public Health Reports*, January 9, 1925.

Treatment of Anemia. The administration of desiccated spleen and red bone marrow, combined in equal proportions in three 5-grain capsules daily to persons with secondary anemia has been found to be followed by an increase in hemoglobin and circulating erythrocytes. This preparation, however, caused a fall in hemoglobin and circulating erythrocytes in four patients with pernicious anemia.—Wm. Thalhimer, M.D., *Journal of Laboratory and Clinical Medicine*, November, 1924.

Rickets. The most striking feature of rickets is deficiency in calcium content of the skeleton. The ingestion of calcium, its absorption, utilization and excretion is the whole problem. Results of metabolic experiments seem to show that may be a diminished absorption of calcium even when available in ample amount in the diet. What leads to this diminished absorption still awaits solution. There is the idea that rickets is of intestinal origin, but several links in the evidence are lacking.—Leonard Findlay, *Journal of American Medical Association*, November 8, 1924.

MALNUTRITION. Malnutrition is not a disease but a state arising from influences that prevent the child from living a normal life and resulting in underweight and lowered vitality. Too much food is as harmful as too little. Malnourished children may be divided into two groups—one is habitually stuffed, the other starved.—Jack F. Perkins, M.D., *Nation's Health*, December, 1924.

MORE CARBOHYDRATES FOR ATHLETES. In the course of public lectures on diabetes at the Harvard Medical School Dr. Elleiott P. Joslin, asserted that sugar given to tired athletes would give them renewed vigor. Chocolate bars for marathon runners and foot ball players may result in new records.

Examination of athletes after exhausting struggles last year showed a lack of sugar in the blood. Sugar is good for the athlete or for one who indulges in strenuous exercise.

Marathon runners at the end of a race show the same sugar exhaustion as a patient who had an over-dose of insulin.—*New York Times*, March 15, 1925.

SOME OF THE RECENT WORK ON INSULIN. Some new problems of metabolism are being attached since the use of insulin. One concerns the physiologic condition of depancreatized animals injected daily with insulin, the other has to do with the possibility of deriving insulin from other sources other than the isles of Langerhans. Experiments a year ago of Allan, Bowie, Macleod and Robinson lead to the following conclusions:

It was concluded that the pancreas must be essential to the physiologic well-being of the animal, quite apart from its rôle in producing insulin. Two reasons were suggested to explain how the absence of the pancreas might cause the fatty changes in the liver; the one being that owing to the absence of pancreatic juice a faulty digestive process would be set up in the intestine, and as a result toxic amines, or similar substances, by their absorption into the portal blood, would injure the liver cells and so lead to fatty changes and the other, that some pancreatic (other than insulin) necessary for the metabolism of fat had been withdrawn from the organism. In support of the former view it was observed that about 50 per cent of ingested protein reappeared in the feces, often in a completely undigested state and that only a small percentage of fat was absorbed.

As a result of the conclusions other recent experiments have been done. Raw pancreas was fed to dogs in addition to the insulin. The dogs survived pancreatectomy for fifteen months and are still in excellent nutritive condition. On the other hand, this result may be due to the fact that feeding raw pancreas some hormone other than insulin, is absorbed. To test this possibility trypsin is now being administered in place of raw pancreas but can not yet be reported.

Experiments as to possible other sources of insulin in the body have lead to the following conclusions: The discontinuance of the injection of insulin into depancreatized dogs causes severe diabetes to supervene in a day followed by death. If tissues other than pancreas can produce insulin why do they fail here? A second conclusion is drawn from experiments on the body of a bony fish in which the pancreas does not contain the islets of Langerhans, these islets are encapsulated in glands outside the pancreas usually near the spleen. Extracts prepared from these contained large amounts of insulin whereas none was obtainable from the pancreas itself.

A final proof is still lacking, namely to see whether administration of insulin to islectomized fish would prevent the development of diabetic symptoms.—Dr J. J. R. Macleod, *Journal of Laboratory and Clinical Medicine*, March, 1925.

VITAMINE C IN CANNED APPLES. The effect of different methods of canning of apples in reference to vitamine C content has been carried on this year and the following results obtained: These experiments demonstrate in an unique way and in detail the effect of oxygen in vitamine C distruction. They demonstrate that when the oxidation factor is excluded, the effect of heat is extremely small. Furthermore they demonstrate that apples canned in the Fall of the year under the following processes, i.e., (1) and (2) are richer in vitamine C in the Spring than the same apples uncanned if held in cold storage over winter.

Process 1. Apples peeled and quarted late in afternoon and covered with a 2 per cent salt solution and held at basement tem-

perature until morning. Solution was then dra ned off, the apples weighed into plain cans then covered with boiling water, given a two minute water exhaust at boiling temperature closed and processed.

Process 2. Method the same as in process (1) only apples were steamed six minutes to soften them before filling cans thus a commercial "solid pack" was obtained.—Research Laboratory, National Canners Association, *American Food Journal*, February, 1925.

THE USE OF MEAL UNIT DIET IN DIABETES. A diet is described by Dr. Ralph Major of Kansas City, Kansas, Department of Internal Medicine, University of Kansas School of Medicine.

The principle of this diet is based on giving the patient 30 calories per kilogram of body weight and giving carbohydrate, protein and fat in the ratio of 1:2:3. In making the calculation, the patient's weight in kilograms is multiplied by 30. This gives the total calories necessary for basal maintenance diet. One tenth of this amount of calories is given in carbohydrate, and a division of this figure by 4 gives the grams of carbohydrate necessary. Twice this amount is given in protein and three times this amount in fat. An example of this calculation is as follows:

The patient weighs 70 kgm.

$70 \times 30 = 2100$, total calories daily

$2100 \div 10 = 210$ calories in carbohydrates

$210 \div 4 = 52$ grams of carbohydrates

The basal maintenance diet for this patient is 52 grams of carbohydrate, 104 grams of protein and 156 grams of fat, daily. A still simpler method of arriving at this calculation is to divide the weight in pounds by 3, which gives approximately the grams of carbohydrate necessary. Thus, a patient weighing 70 kgm. weighs 154 pounds. Dividing 154 pounds by 3, we get 51, the grams of carbohydrate necessary.

USE OF THE DIET. This method of calculation also permits the use to some extent of standardized diets. A series of breakfasts, dinners and suppers have been used varying from 5 to 50 grams of carbohydrate per meal, with protein and fat in the ratio of 1:2:3. If a patient is on a diet of 30 grams of carbohydrate a day, he may take the greater amount of this at any one meal, or may distribute it evenly throughout the day. Thus, he may take 10 grams at breakfast, 10 grams at dinner and 10 grams at supper, or he may take 15 grams at breakfast, 10 grams at dinner and 5 grams at supper. This arrangement of diet allows much flexibility and gives a great variety to the dietary.

If the patient is taking insulin, the daily dose is divided so that the greatest amount is taken before the meal containing the largest quantity of carbohydrate. In case the patient is overweight, the diet is calculated for his ideal instead of for his actual weight.

It is realized, of course, that the 1:2:3 diet as outlined, and the meal unit system, will not be applicable in every case of diabetes. There are a certain number of cases of severe diabetes, particularly juvenile cases, in which more intricate adjustments of diet will be required. For some very obese diabetic patients, it is desirable to reduce the amount of fat. With the great majority of diabetic patients, however, the foregoing plan is quite workable.

NEWS ITEMS

Mr. and Mrs. Milton E. Griem announce the arrival of Melvin Luther Griem, on May 22, 1925.

MASSACHUSETTS DIETETIC ASSOCIATION. At the final business meeting of the Massachusetts Dietetic Association, the following officers were elected for the coming year: President, Miss Quindara Oliver, Children's Hospital; vice president, Miss Eva Thallman, Massachusetts General Hospital; recording secretary, Miss M. Louise Elliot, Community Health Association; corresponding secretary, Miss Gretchen MacMullen, Brunswick Tea Shoppe; parliamentarian, Miss Edith Lincoln, Wheaton College; treasurer, Miss Margaret McGovern, Boston City Hospital.

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Hospital Management:

April, 1925.

Pp. 47. Central service for new building of Homeopathic hospital, East Orange, New Jersey.

Pp. 57. "Tea room effect" pleases personnel. Dining room plan of Louisville City hospital changed to Cafeteria.

May and June, 1925.

No articles of special dietetic interest.

Modern Hospital:

April, 1925.

Pp. 368. The hospital dietary department. A forecast. Malcolm T. MacEachern.

May, 1925.

Pp. 472. Diet in the treatment of diabetes. Lulu G. Graves.

June, 1925.

Pp. 518. Food problems in state hospitals. A. L. Bowen.

Pp. 562. The use of fruit in the diet. Lulu G. Graves.

Pp. 564. How special diet restaurants spread the food gospel. Mary A. Foley.

Hospital Progress:

June, 1925.

Pp. 254. Complete steam operated kitchen equipment for hospitals and a modern installation.

Nation's Health:

March, 1925.

Pp. 185. The sanitary bakery safeguards the common health. H. E. Barnard.

Pp. 196. Emphasize the food value of milk.

April, 1925.

Pp. 252. The underweight child and the mid-morning lunch.

Pp. 260. Clean cows and safe milk make healthy babies. Lena K. Sadler, M.D.

Pp. 274. Garbage disposal, a problem of the engineer.

Pp. 278. Preventing scurvy in young children.

Pp. 270. Canada works out standards for community hospitals.

Journal of Home Economics:

April, 1925.

Pp. 189. Soaps. Martin Hall Ittner.

Pp. 199. Scientific research in coffee brewing. Helen Louise Johnson.

Pp. 206. Studies of coffee making by precise methods. Elizabeth C. Sprague.

May, 1925.

Pp. 249. A marketing exhibit. Day Munroe.

Pp. 254. Wearing tests of kitchen toweling. Katherine Taylor Cranor and Ida Belle Dorsey.

Pp. 260. The psychology of child nutrition. C. Rowena Schmidt.

Pp. 265. The loss of mineral and other constituents from vegetables by various methods of cooking. W. H. Peterson and C. A. Hoppert.

June, 1925.

Pp. 315. A survey of food habits in a Hungarian mining town. Irma H. Gross.

Pp. 324. A program for nutrition in coöperative extension work. Florence E. Ward.

Pp. 329. The consumer testifies. Caroline B. Sherman.

American Food Journal:

April, 1925.

Pp. 207. The use of the metric system in nutrition.

May, 1925.

Pp. 240. Supplementary reading for food study classes.

Pp. 250. Studies of the properties of wheat starch and the baking qualities of flour.

Hotel monthly:

April, 1925.

Pp. 29. A training school for hotel and restaurant chefs.

June, 1925.

Pp. 56. Kansas "ag" College, mother of Home Economics. Katherine McFarland.

Journal of the American Medical Association:

April 4, 1925.

Pp. 1029. Intestinal parasites among Filipino food handlers. Harry A. Wyckoff and Wm. O. French.

April 11, 1925.

Pp. 1093. Irradiated foods and irradiated organic compounds. Therapeutic possibilities. Harry Steenbock and Amy L. Daniels.

Pp. 1103. Dietary control of nephritis. Martha Koehne.

April 18, 1925.

Pp. 1173. Cereal gruel feeding. Oscar E. Chase.

May 9, 1925.

Pp. 1401. Effects of radiations of cod liver oil. I. A. Manville, M.D.

Pp. 1402. Viability of typhoid bacilli in shell oysters. E. O. Jordan.

Pp. 1403. Viability of B. typhosus in oysters during storage. F. O. Tonney, M.D., and T. L. White, M.D.

Pp. 1406. Sugar threshold in diabetes. Joseph H. Roe Phid and Oliver J. Irish, U. S.

May 23, 1925.

Pp. 1565. Variations in the acidity of different parts of the gastric residuum. Roger S. Hubbard, Ph.D., and Samuel A. Munford, M.D.

May 30, 1925.

Pp. 1620. The treatment of diabetes mellitus in children. A. Graeme Mitchell, M.D.

American Journal of Physiology:

March, 1925.

Pp. 43. The glycogen content of the heart, liver and muscles of normal diabetic dogs.

Pp. 69. Relation of vitamin deficiency to muscle fatigue. Nelson, Baldwin, Riggs and Cunningham.

Pp. 99. The small intestine in hunger. Iby, Vloedman and Keane.

April, 1925.

Pp. 256. Influence of insulin on the inorganic and organic phosphates of the liver. Cori-Goltz.

Pp. 260. Amino acids in nutrition—alanine and indol synthesis of tryptophane. Barnett Sure.

Pp. 264. The maximum human power and its fuel. Henderson and Haggard.

Pp. 331. Presence of secretin with intestinal juice. G. W. Volborth.

May, 1925.

Pp. 395. Blood regeneration in severe anemia. I. Standard basal ration bread and experimental methods.

Pp. 408. II. Favorable influence of liver, heart and skeletal muscle in diet.

Pp. 419. III. Iron reaction favorable. Arsenic and germanium dioxide almost inert. IV. Green vegetable feeding. G. H. Whipple, F. S. Robscheit and Robbins.

Journal of Biological Chemistry:

March, 1925.

Pp. 19. Observations on blood lactic acid after insulin. Best and Ridout.

Pp. 211. Dietary requirements for reproduction. IV. Solubility of the reproductive dietary complex (vitamin E) in various organic solvents. Barnett Sure.

Pp. 233. Rôle of vitamin B in relation to the size of growing rats. Mendel and Mendel.

Pp. 239. Distribution of unsaturated fatty acids. Cholesterol and cholesterol esters in experimental anemia. Bodansky.

Pp. 253. Influence of insulin and epinephrine on lactic acid content of blood and tissues. Carl F. Cori.

Pp. 297. Imparting antirachitic properties to inert substances by ultra violet irradiation. Hess-Weinstock.

April, 1925.

Pp. 553. Effect of additions of fluorine to the diet for the rat on the quality of the teeth. McCollum, Simmonds, Becker, Bunting.

Pp. 563. The enzymatic synthesis of protein. IV. The effect of concentration on peptic synthesis. V. A note on the synthesizing action of trypsin. Wasteneys-Borsook.

Pp. 585. Effect of intravenous injection of inorganic chlorides on the composition of blood and urine. Mary Whalen.

Pp. 641. The action of trypsin on insulin. D. A. Scott.

May, 1925.

Pp. 1. The resistance of the antirachitic substance in codliver oil to reagents. Charles E. Bills.

Pp. 111. The antiscorbutic properties of eggs. S. M. Hauge and C. W. Carrick.

Pp. 161. Further studies on the cause of ophthalmia in rats produced with diets containing vitamin A.

American Journal of Medical Sciences:

June, 1925.

Pp. 838. The influence of the gall bladder on intestinal motility. Benjamin M. Bernstein.

Clinical Medicine:

April, 1925.

Pp. 229. The treatment of gastric ulcer and hyperchlorhydria. Solomon R. Kagan, M.D.

Medical Journal and Record:

May 20, 1925.

Pp. 621. Protein shock in the treatment of rheumatoid arthritis. J. N. Cruickshank.

Pp. 625. Arthritis and infection of the digestive tract. N. Mutch.
Pp. 628. Diet in rheumatism. Adam H. Wright.

Archives of Internal Medicine:
May 15, 1925.
Pp. 549. Pathologic changes occurring in white rats raised on diets deficient in vitamin A. Ira D. Manville.

ASSOCIATION NEWS

REPORT OF THE PROGRAM COMMITTEE OF THE AMERICAN DIETETICS ASSOCIATION

Kate Daum, Chairman

EIGHTH ANNUAL CONVENTION

Chicago, Illinois, October 12 to 15, 1925

The Edgewater Beach Hotel, 5300 Block Sheridan Road, Chicago

TENTATIVE PROGRAM

Monday, October 12

9:00 a.m.—REGISTRATION.

10:00 a.m.—GENERAL SESSION—Ruth Wheeler, presiding.

Presidential Address—Ruth Wheeler, College of Medicine, State University of Iowa.

Dietary Care and Advice Desired by the Surgeon, (particularly in hyperthyroidism, diabetes, obesity, jaundice and intestinal obstruction).

Dietary Care and Advice Desired by the Obstetrician (during pregnancy and after delivery).

12:00 Noon—LUNCHEON.

Reports from the Field—Octavia Hall Smillie—presiding.

Canada—Maud Perry

New York—Mary de Garmo Bryan.

Chicago—Elizabeth Tufts.

Philadelphia—Helen Gilson.

New England—Amalia Lantz.

Southern California—Martha Davis.

New Zealand—Eleanor Wells.

China—Pauline Richardson.

Personal—Margaret Gillam, Lutie Trout, Katharine Harris, Margaret Sawyer.

Monday afternoon

2:30 p.m.—ROUND TABLE—Ruth Wheeler, presiding.

Constitution

Election of Officers.

Journal.

Placement Bureau.

Finanaces.

7:00 p.m.—DINNER—Ruth Wheeler, presiding.

Present achievements and future developments in fields closely associated to dietetics.

The nursing field—Dean Anna Goodrich, New Haven.

The medical center—C. C. Burlingame, M.D., Columbia University and Presbyterian Hospital Medical Center, New York City.

Normal nutrition—Katharine Blunt, University of Chicago.

Tuesday, October 13

10:00 a.m.—ADMINISTRATIVE SECTION, Quindara Oliver, presiding.

The Dietary Department—Its Organization and Relation to other Hospital Departments—W. C. Rasppeleye, Yale University.

Master Planning—the Need of All Efficiently Operated De-

partments—Professor Freeland, Massachusetts Institute of Technology.

Results of Study of Administration Section—The Department Budget.

12:00 Noon—Luncheon with the exhibitors—Katharine A. Fisher, presiding.

Practical suggestions from our exhibitors as to food standards and markets.

Equipment.

Constructive methods of judging equipment.

2:30 p.m.—GENERAL SESSION—Lulu Graves, New York City, presiding.

Obesity Symposium:

Physiology of and the influence of such factors as the endocrines, heredity, and nervous instability on obesity—A. J. Carlson, Ph. D., University of Chicago.

Metabolism in the very obese—Chi Chi Wang, M.D., Michael Rees Hospital, Chicago.

Methods of handling obesity and results:

The private patient—E. W. Miller Koch, Chicago.

The clinic patient—Louise Clarke, Presbyterian Hospital, New York.

The insurance clinic—H. H. Fellows, Metropolitan Life Insurance Co., N. Y. C.

The college student—Obesity Cures—Paul Leech, Ph.D., Chemist, A. M. A., Chicago.

Wednesday, October 14

9:00 a.m.—SOCIAL SERVICE SECTION—Bertha Edwards, presiding.

9:00 a.m.—DIET THERAPY SECTION—Nelda Ross, presiding.

Cardiac Feeding—Isabel Ackerman, University Hospital, Ann Arbor, Michigan.

Dietary Regulation in a Diabetic Clinic—Elizabeth Wyckoff, Presbyterian Hospital, New York City.

Thyroid Disturbances, Martha E. Davis, Scripps Metabolic Clinic, La Jolla, Calif.

Studies in Constipation—Eliza-Magers, Nutrition Dept. of State University, Iowa City, Iowa.

Ten minute talks by dietitians:

1. What shall we expect our diabetic patients to know?—Dorothy Stewart, University Hospital, Ann Arbor, Michigan.
2. Case Reports--Louise M. Keegan, Montifiore Hospital, New York City.
3. Pulmonary Tuberculosis—Helen Abbott Douglas, San Francisco General Hospital, San Francisco Calif.
4. Acid Milk for Infants—Alvina E. Misch, University Hospital, San Francisco, Calif.
5. Information Sheets for use in Hospitals (compiled by Washington Dietetic Association)—Mabel G. Flanley, Seattle General Hospital, Seattle, Washington.

12:00 Noon—Luncheon—Committees.

2:30 p.m.—EDUCATION SECTION—Breta L. Griem, presiding.

Teaching Diet Therapy to Student Nurses—R. M. Wilder, M.D., Division of Medicine, Section of General Nutrition and Diabetes, Mayo Clinic, Rochester, Minn.

Discussion.

A Combination Theory and Practice Course for Student

Dietitians—Florence Otis, Professor of Nutrition University of Cincinnati.

Accrediting Hospitals for Student Dietitian Training—Eva Thallman, Mass. General Hospital, Boston, Mass.

College Courses for Prospective Dietitians.—Abby L. Marlatt, Professor of Nutrition, University of Wisconsin.

Discussion.

8:00 p.m.—GENERAL SESSION—Mary de Garma Bryan, presiding.

Gastro-intestinal symposium.

Results and findings of experimental physiology of the gastro-intestinal tract —Lester Dragstedt, M.D., Northwestern Medical School, Chicago.

Gastric-Ulcer.

The Importance of diet in normal and abnormal intestinal conditions—Donald P. Abbott, M.D., Chicago.

Thursday, October 15

Sight seeing trips in the City.

Thursday, October 15th, will be devoted to trips that will be not only of professional interest to dietitians but will include also a view of Chicago's most beautiful and famous places of general interest. We shall visit:

Cook County Hospital
Presbyterian Hospital
University of Illinois Hospital
Michael Reese Hospital
Wesley Memorial Hospital
An infant Welfare Clinic
Central Free Dispensary
One of the large Wholesale Houses
City Markets
Union Stock Yards
Marshall Field's Tea Room
University of Chicago

There will be special demonstrations at these various places, details of which, will be given out later.

THE EXHIBITS

Commerical. With such a center of industrial and scientific enterprise as Chicago to draw upon, the exhibit should prove to be an unusual and distinctive feature of the convention.

Non-commerical. This permanent non-commerical exhibit which made such an excellent beginning last year will have many new additions. The material collected will be classified according to type; thus:

1. That of special interest to hospital dietitians.
2. Material of social service nature.
3. Bibliography of new publications and books of interest to dietitian doing public health work.
4. Material of especial interest to the administrative dietitian.

Unquestionably there will be something of interest and profit to all dietitians and Home Economics Workers.

TRANSPORTATION

We have arranged with the railroads for a special rate of fare and one-half on the certificate plan from all points in The United States for our Annual Meeting in Chicago.

On the going trip members will purchase regular one way tickets and ask the ticket agent for a certificate form of receipt.

These receipts will be collected at the meeting and if there are 250 or more presented, showing the purchase of going tickets to Chicago at fare of 67 cents or more, the certificates will be validated and honored for return tickets at one-half the regular fare. This will be equivalent to a 25 per cent reduction in both directions.

These rates apply also to members of the family.

To get the 250 certificates will call for a lot of team work. Every member should make up his mind to attend the Chicago Meeting—it is going to be a most interesting and instructive affair, worth while coming across the country

to attend. Travel by rail and don't forget to ask the ticket agent at your home station for a certificate form of receipt. It will be safest to see him a few days before you leave—sometimes they let their supply run out.

Many Conventions just come within twenty-five of having the necessary 250 certificates, with the result that the 225 who made the trip, thinking that a sufficient number of their fellow members would attend to secure the reduction, have to pay the full fare.

For the good of the Convention and also to secure the reduced railroad fare we want to make sure of 250 who will travel by rail.

Notices will be sent later regarding selling dates and expiration dates of tickets.

EDGEWATER BEACH HOTEL—CONVENTION HEADQUARTERS—CONVENTION RATES

Single rooms: $4.00 per day.
Double rooms (each to have single bed): $6.00 per day.
Three in a room (each to have single bed): $7.50 per day.

Rates in the Grill:
Breakfast: $.35 and up.
Luncheon: $.65.
Dinner: $1.00.

Rates in the Marine Dining Room:
Breakfast: $.40 and up.
Luncheon: $1.00.
Dinner: $1.50, $2.00, and $2.50.

MEMBERS WHOSE MAIL HAS BEEN RETURNED

Alvather, Helen L. W.....1111 17th Street, N.W., Washington, D.C.
Davis, Grace A.....29 W. 36th Street, New York City
Dunning, Frances.....Department of Home Economics, College of Agriculture, Lincoln, Nebr.
Feld, Anita.....509 S. Honore Street, Chicago, Ill.
Fotheringham, Margaret.....Mercy Hospital, Pittsburg, Pa.
Griffin, Inez.....St. Agnes Hospital, Philadelphia, Pa.
Haupt, J. Katherine.....Illinois Central Hospital, Chicago, Ill.
Hill, Norma.....Parkersburg, W. Va.
Howland, Anna.....418 Franklin Street, Buffalo, N. Y.
Jessup, Henrietta.....Talham House, 138 E. 38th Street, New York City
Kohman, Lillian.....Bismarck Hospital, Bismarck, N. D.
Landel, Ruth.....Altoona Hospital, Altoona, Pa.
Lawler, John.....210 E. 23rd Street, New York City
Lends, Nettie.....Helena, Mont.
Maury, Margaret Rebecca.....210 Ninth Street, Galveston, Tex.
McHenry, Katharine.....917 E. 47th Street, Chicago, Ill.
Nichol, Edith.....Western High School, Washington, D. C.
Poor, Marguerite.....State Hospital, Howard, R. I.
Reinhold, Hilda.....Mercy Hospital, Pittsburg, Pa.
Sherwood, Elizabeth.....Daly Building, Ottawa, Ontario
Sims, Dede M.....Altoona Hospital, Altoona, Pa.
Strong, Helen L.....477 W. Ninth Street, Winona, Minn.
Warner, Muriel.....Lancaster General Hospital, Lancaster, Pa.
Wood, Nellie.....722 Home Avenue, Fresno, Calif.